



## Certified Hemodialysis Nurse Detail of Examination Content

### DOMAIN I: Supervision/Management (10%)

#### A. Personnel Management

Develop and implement policies and procedures relating to personnel management of patient care staff.

1. Patient needs and staffing patterns
2. Staff abilities and limitations
3. Standards of dialysis care
4. Unit policies and procedures relating to personnel management
5. Medical ethical issues involved with patient care

#### B. Equipment and Supplies

Develop and implement policies and procedures for evaluation of equipment and supplies for potential unit use.

1. Current status of dialysis technology
2. Critical elements for evaluation of dialysis equipment and supplies
3. AAMI Standards for Hemodialysis Systems

### DOMAIN II: Dialysis and Related Issues (74.5%)

#### A. Patient Care

Collect, document and analyze patient information before, during and after dialysis in order to maintain and/or improve the quality of patient care through continuous evaluation and ongoing revision of interventions.

1. Steps in the nursing process
2. Normal renal anatomy and physiology
3. Fluid and electrolytes
4. Causes of renal failure
5. Clinical manifestations of renal failure
6. Dialysis principles and procedures
7. Physical assessment
  - a. normal and abnormal patient signs and symptoms
8. Nursing interventions
  - a. teaching
  - b. counseling
  - c. referral
9. Charting
10. Medications
  - a. use of medications
  - b. desired effects of medications
  - c. interactions with dialysis
11. Nutritional considerations
  - a. restrictions (i.e., fluid, protein, potassium, sodium)
  - b. dietary noncompliance
12. Complications occurring during dialysis
13. Psychosocial aspects of renal failure
14. Types of vascular access
  - a. creation



- b. care and precautions
- c. complications of each type
- 15. Heparinization
  - a. the coagulation system
  - b. heparin and its effects on the coagulation system
- 16. Types of adjunctive therapy
  - a. sequential ultrafiltration
  - b. hemoperfusion
  - c. hemofiltration
  - d. bicarbonate dialysis
  - e. high sodium dialysate
- 17. Determining the adequacy of dialysis
  - a. kinetic modeling
- 18. Quality control and quality assurance
- 19. Other treatment modalities
  - a. peritoneal dialysis
  - b. transplantation

## **B. Machine Set Up**

Set up equipment prior to the start of the dialysis procedure to ensure that all parameters are intact and functional.

1. Dialysis fluid delivery systems
  - a. types
  - b. functions
    - i. abnormal functions
    - ii. corrective actions
  - c. monitors and alarms
    - i. function
  - d. disinfectants
    - i. rinsing and testing
  - e. AAMI Standards for Dialysate Supply Systems
2. Dialyzers
  - a. various types
  - b. priming and testing procedures
3. Dialysis Bath
  - a. chemical composition
  - b. types of dialysis baths
  - c. techniques for altering the composition of the dialysis bath
  - d. verification of dialysate composition
4. Ancillary equipment
  - a. procedures for use of ancillary equipment

## **C. Initiation of Dialysis**

Connect patient to dialysis machine to initiate procedure by obtaining access to circulation, taking blood samples, beginning blood flow, administering the anticoagulant, monitoring machine parameters and patient response.

1. Aseptic technique
2. Access to the patient's blood circulation (i.e., types)
3. Machine parameters
  - a. QB
  - b. QD
  - c. TMP/UFR



- d. conductivity
- e. temperature
- 4. Blood drawing
  - a. sampling techniques
  - b. blood analyses
- 5. Anticoagulation
  - a. parameters
  - b. dosage adjustment
  - c. methods for performing blood clotting time analysis
- 6. Patient responses, potential problems and emergencies (i.e., hemolysis, blood leak, venipuncture)
  - a. resolutions
- 7. Acute dialysis
  - a. acute renal failure care
  - b. specific and/or special care and precautions to be taken

#### **D. Monitoring During Dialysis**

patient response during dialysis, recognizing and responding to problems and emergencies, by collecting and analyzing patient and machine data in order to maintain safe and effective dialysis.

- 1. Patient response
- 2. Machine parameters and adjustments
  - a. QB/QD
  - b. TMP/UFR
  - c. conductivity
  - d. temperature
- 3. Complications during dialysis
  - a. resolution

#### **E. Termination of Dialysis Procedure**

Terminate dialysis procedure by stopping further blood flow, returning the extracorporeal blood to the patient, disconnecting the patient, stabilizing and dressing the access and cleaning the machines.

- 1. Methods of returning extracorporeal blood
- 2. Achieving hemostasis of various internal blood accesses
  - a. dressing procedures for all types of dialysis access
  - b. maintaining patency of catheters
- 3. Cleaning and disinfection of machine
  - a. types of solutions
  - b. solution concentration
  - c. dwell time
- 4. Disposal of software
- 5. Potential problems and emergencies associated with the termination of dialysis
  - a. Resolutions

**F. Home Dialysis**

Teach the patient and dialysis partner how to set up the machine, initiate, monitor and terminate the dialysis procedure and recognize and respond to problems, or emergencies in order to maintain safe and effective dialysis in the patient's home.

1. Principles of adult learning

**G. Dialyzer Reuse**

Procedures used for cleaning, disinfecting and rinsing dialyzers so that they will approximate their original performance characteristics with use of appropriate recycling equipment.

1. Methods of dialyzer recycling
  - a. cleaning and disinfectant solutions
2. Testing procedures
3. Record keeping

**H. Water Treatment**

Equipment and methods used for treating water to make it suitable for use in dialysis procedures in order to remove contaminants and trace elements by use of deionization, reverse osmosis, filtration and/or softening.

1. Source water
  - a. analysis of source water
  - b. normal versus abnormal water
    - i. effect on patient and machinery
2. Methods of treating water
  - a. AAMI Standards
  - b. disinfection and rinsing procedures

**I. Transplantation**

Current practice relating to renal transplantation in order to inform and support potential and previous transplant candidates and their families.

1. Advantages/disadvantages of kidney transplantation
2. Indications/contraindications for transplantation
3. Work-up procedures required for transplantation
4. Drugs commonly used as immunosuppressive agents in transplantation
5. Special care needs of patients returning to hemodialysis after a failed transplant
6. Laboratory and other parameters expected in a new transplant patient

**DOMAIN III: Professional Development (5.5%)****A. Information Sharing**

Share information with colleagues to stimulate professional growth by participating in and/or organizing formal in-service programs, disseminating professional literature and attending professional meetings.

1. Professional literature
2. Professional organizations
  - a. purpose of professional organizations

**B. Research**

Investigate clinical nephrology issues to resolve a problem in order to contribute to the body of nephrology knowledge and improve patient care by using the scientific method.

1. Scientific method and its application
2. Research design and implementation

**C. Staff Training**

Orient and instruct staff to unit policies and dialysis procedures to maintain the standards of performance by providing learning situations and observing and evaluating performance.

**DOMAIN IV: Environmental Control (10%)**

Maintain a safe environment for patients and staff to prevent injury and the spread of disease by developing, promoting and implementing policies for the use and handling of chemical and biological agents and the prevention of contamination.

1. Chemical Agents
  - a. use of chemical agents
  - b. effects of chemical agents
  - c. potential hazards of chemical agents
2. Biological Agents
  - a. potential hazards
  - b. effects of biological agents
  - c. routes of transmission
3. Infection Control
4. Occupational Injuries
5. Hazards Prevention and Control (i.e., fire, bomb threats, power failure, water loss and/or contamination, etc.)